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EXAMINER	
RILEY, MARCUS T	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,423	FURUYA, TOMOYUKI	
	Examiner	**Art Unit**	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *12/04/2007; 08/06/2004* .

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 18, 2008 has been entered.

Response to Amendment

2. This office action is responsive to applicant's remarks received on June 18, 2008. Claims 1-14 remain pending.

Response to Arguments

3. Applicant's arguments with respect to amended claims 1, 7 & 12 filed on June 18, 2008 has have been fully considered but they are not persuasive.

A: Applicant's Remarks

Applicant submits that the second emphasized part above indicates that the first two steps of the high-quality mode - multivalue rendering and color correction - may be carried out in either order. The first emphasized part above indicates that the last two steps of the high-quality mode - color conversion and binarization - are carried out with respect to the objects of the image in terms of pattern planes. It is not clear to Applicant how the cited portion could have

disclosed the second rendering means, which involves binary rendering as the last step rather than multivalue rendering as the first step, or how it could have disclosed the first rending means and the second means at the same time.

In addition, the portion of Ohnishi cited as disclosing the determining means is as follows. "FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer." Col. 2, lines 14-19.

This portion discusses merely the storage and reading of an image processing control program or a printer driver and the inputting of a print command. It does not contain any reference to the reading of rendering instructions and the determination of whether any of the rendering instructions contain any overwrite.

Furthermore, Shimizu discusses band rendering vs. degrade rendering as well as hardware rendering vs. software rendering. However, the rendering instructions are not developed into bitmap data one line at a time (see Col 7. lines 36-45, for example). Therefore, Shimizu is not believed to remedy the deficiencies of Ohnishi.

Accordingly, for at least the reasons noted above, Claim 1 is believed to be allowable over Ohnishi and Shimizu, taken separately or in any permissible combination (if any).

Independent Claims 7 and 12 are directed, respectively, to a method and a printer driver, and correspond to apparatus Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

A: Examiner's Response

Examiner submits that Ohnishi discloses the second emphasized part that indicates the first two steps where the color correction may be carried out in either order (*"Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 21-22).

Ohnishi disclosing the determining means is as follows *("FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer..."* column 2, lines 14-19) This portion discusses reading of rendering instructions and the determination of whether any of the rendering instructions contain any overwrite.

Shimizu discusses wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line (*"In*

this embodiment, the mask information 151 to be supported is composed of run length (one scan line in the X direction), convex polygon with no edge crossed, bit map image, and bit map font. As can be seen from such information, the mask information is made a suitable structure for the fast hardware rendering, for example, a pentagon of FIGS. 5A to 5D is subdivided into five triangles not crossed, as shown in FIG. 5B, at step 104 (the painting is in accordance with an even-odd rule in this embodiment). In a line connection processing portion as shown in FIG. 5C, by applying a DDA algorithm in this module, information is expanded into a work area within the management RAM 7 in view of the line connection information (round, miter, triangle), and the final external shape is held in the run length manner for each Y scan line, with min x and max x as pair information, to prepare for the fast rendering to be subsequently performed." column 6, lines 21-37).

Accordingly, for at least the reasons noted above, Claim 1 is not allowable over Ohnishi and Shimizu, taken separately or in combination.

Independent Claims 7 and 12 are directed, respectively, to a method and a printer driver, and correspond to apparatus Claim 1, and are not patentable for at least the same reasons as discussed above in connection with Claim 1.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are not patentable for the same reasons.

Claim Rejections - 35 USC § 112

(The previous claim rejection is withdrawn in light of the applicant's amendments.)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-3, 6-9 & 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi '465 (US 7,853,465 B1 hereinafter, Ohnishi '465) in combination with Shimzu (US 6,490,055 hereinafter, Shimzu '055).

Regarding claim 1; Ohnishi '465 discloses a printing control apparatus for outputting print data and executing printing, comprising: storage means, to which rendering instructions are input, for storing the rendering instructions page by page (*"FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;"* column 2, lines 14-19); a first rendering means for developing rendering instructions of each line into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit*

map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map." column 4, lines 15-22); a second rendering means for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22); a determining means for reading out rendering instructions that have been stored in said storage means and determining whether the rendering instructions include a rendering instruction other than overwrite ("*FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;"* column 2, lines 14-19).

Ohnishi '465 does not expressly disclose control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said

determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line.

Shimizu '055 discloses control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; (*"...and control means for controlling the band rendering to be executed without lowering the color gradation when the banding process is judged to be executable by said judgment means, or the degrade rendering to be executed by lowering the color gradation when the banding process is judged to be inexecutable."* column 3, lines 10-15). See also (*"At step 901, the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management RAM 7 through the PDL analysis task 120, and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line (*"In this embodiment, the mask information 151 to be supported is composed of run length (one scan line in the X direction), convex polygon with no edge crossed, bit map image, and bit map font. As can be seen from such information, the mask information is made a suitable structure for the fast hardware*

rendering, for example, a pentagon of FIGS. 5A to 5D is subdivided into five triangles not crossed, as shown in FIG. 5B, at step 104 (the painting is in accordance with an even-odd rule in this embodiment). In a line connection processing portion as shown in FIG. 5C, by applying a DDA algorithm in this module, information is expanded into a work area within the management RAM 7 in view of the line connection information (round, miter, triangle), and the final external shape is held in the run length manner for each Y scan line, with min x and max x as pair information, to prepare for the fast rendering to be subsequently performed." column 6, lines 21-37).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055.

The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31).

Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 2; Ohnishi '465 discloses where said first rendering means includes: means for generating multi-valued bitmap data based upon the rendering instructions; first color correcting means for performing a color correction of the multi-valued bitmap data; first color converting means for converting colors of the multi-valued bitmap data that has been subjected to the color correction by said first color correcting means to multi-valued bitmap data of another color space; and n-value converting means for subjecting the multi-valued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22).

Regarding claim 3; Ohnishi '465 discloses where said second rendering means includes: second color correcting means for correcting colors of an image included in the rendering instructions; second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space; image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern; and means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22).

Regarding claim 6; Ohnishi '465 discloses where the value of n is 2 (*"In the optimal color process for each object, for example, a coefficient for color conversion, and the size of a dither matrix for binarization and a threshold value are consonant with the attribute of an object. The size of an n-valued dither matrix, a threshold value and the number of sheets may be consonant with the attribute of an object."* column 7, lines 27-32).

Regarding claim 7; Ohnishi '465 discloses a printing control method for outputting print data and executing printing, comprising: a storage step of inputting rendering instructions and storing the rendering instructions in a memory page by page (*"FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;"* column 2, lines 14-19); a first rendering step of developing rendering instructions of each line into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22); a second rendering step of subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."*

column 4, lines 15-22); a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction other than overwrite (“*FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;*” column 2, lines 14-19).

Ohnishi ‘465 does not expressly disclose a control step of extracting edges of objecst in the rendering instructions in each line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line.

Shimizu ‘055 discloses a control step of extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite (“*...and control means for controlling the band rendering to be executed without*

lowering the color gradation when the banding process is judged to be executable by said judgement means, or the degrade rendering to be executed by lowering the color gradation when the banding process is judged to be inexecutable." column 3, lines 10-15). See also (*"At step 901, the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management RAM 7 through the PDL analysis task 120, and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line (*"In this embodiment, the mask information 151 to be supported is composed of run length (one scan line in the X direction), convex polygon with no edge crossed, bit map image, and bit map font. As can be seen from such information, the mask information is made a suitable structure for the fast hardware rendering, for example, a pentagon of FIGS. 5A to 5D is subdivided into five triangles not crossed, as shown in FIG. 5B, at step 104 (the painting is in accordance with an even-odd rule in this embodiment). In a line connection processing portion as shown in FIG. 5C, by applying a DDA algorithm in this module, information is expanded into a work area within the management RAM 7 in view of the line connection information (round, miter, triangle), and the final external shape is held in the run length manner for each Y scan line, with min x and max x as pair information, to prepare for the fast rendering to be subsequently performed."* column 6, lines 21-37).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding a control step of extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055.

The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31).

Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 8; Ohnishi '465 discloses where said first rendering step includes: a step of generating multi-valued bitmap data based upon the rendering instructions; a first color

correcting step of performing a color correction of the multi-valued bitmap data; a first color converting step of converting colors of the multi-valued bitmap data that has been subjected to the color correction at said first color correcting step to multi-valued bitmap data of another color space; and an n-value converting step of subjecting the multi-valued bitmap data that has been subjected to the color conversion at said first color converting step to an n-value conversion (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22).

Regarding claim 9; Ohnishi '465 discloses where said second rendering step includes: a second color correcting step of correcting colors of an image included in the rendering instructions; a second color converting step of converting colors of the image that has been subjected to the color correction in said second color correcting step to colors of another color space; an image n-value converting step of subjecting the image data of the image that has been subjected to the color conversion at said second color converting step to an n-value conversion and creating an n-valued pattern; and a step of creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed in said image n-value converting step (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit*

map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map." column 4, lines 15-22).

Regarding claim 12; Ohnishi '465 discloses a printer driver for receiving rendering instructions from an application, creating print data and outputting the print data to a printing apparatus, comprising: storage means, to which rendering instructions are input from the application, for storing the rendering instructions in a memory page by page (*"FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;"* column 2, lines 14-19); a first rendering means for expanding rendering instructions of each line, which rendering instructions have been stored in the memory, into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22); a second rendering means for subjecting the rendering instructions that have been stored in the memory to color

processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22); a determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction other than by overwrite; (*"FIG. 2 is a conceptual diagram showing a process during which data, which is associated with an image processing control program and which is stored in the storage device of a medium reading unit, is read by a central processing unit and a print command is input by an input unit for the transmission of data to a printer;"* column 2, lines 14-19).

Ohnishi '465 does not expressly disclose control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite, and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line.

Shimizu '055 discloses control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite, and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite (*"…and control means for controlling the band rendering to be executed without lowering the color gradation when the banding process is judged to be executable by said judgment means, or the degrade rendering to be executed by lowering the color gradation when the banding process is judged to be inexecutable."* column 3, lines 10-15). See also (*"At step 901, the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management RAM 7 through the PDL analysis task 120, and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line (*"In this embodiment, the mask information 151 to be supported is composed of run length (one scan line in the X direction), convex polygon with no edge crossed, bit map image, and bit map font. As can be seen from such information, the mask information is made a suitable structure for the fast hardware rendering, for example, a pentagon of FIGS. 5A to 5D is subdivided into five triangles not crossed, as shown in FIG. 5B, at step 104 (the painting is in accordance with an even-odd rule in this embodiment). In a line connection processing portion as shown in FIG.*

5C, by applying a DDA algorithm in this module, information is expanded into a work area within the management RAM 7 in view of the line connection information (round, miter, triangle), and the final external shape is held in the run length manner for each Y scan line, with min x and max x as pair information, to prepare for the fast rendering to be subsequently performed." column 6, lines 21-37).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite, and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055.

The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31).

Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 13; Ohnishi '465 discloses where said first rendering means includes: means for generating multi-valued bitmap data based upon the rendering instructions; first color correcting means for performing a color correction of the multi-valued bitmap data; first color converting means for converting colors of the multi-valued bitmap data that has been subjected to the color correction by said first color correcting means to multi-valued bitmap data of another color space; and n-value converting means for subjecting the multi-valued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22).

Regarding claim 14; Ohnishi '465 discloses a where said second rendering means includes: second color correcting means for correcting colors of an image included in the rendering instructions; second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space; image n-value converting means for subjecting the image data of the image

that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern; and means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means (*"...while referring to the pattern plane, color conversion, which is consonant with the attribute of an object, is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map. When the processing has been completed for the overall image, the device bit map is transmitted to the printer. Color correction may be performed either before or after the color data have been used to generate the bit map."* column 4, lines 15-22).

6. **Claims 4, 5, 10 & 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi '465 in combination with Shimzu '055.

Regarding claim 4; Ohnishi '465 as modified does not expressly disclose where said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means.

Shimzu '055 discloses where said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means (*"Each mask object finally created is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory, i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), sorting each mask object for*

each band, and making up a link list as shown in FIG. 5D within each band." column 6, lines 38-44).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding where said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means as taught by Shimzu '055.

The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31).

Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 5; Shimzu '055 discloses where the sorting order is in a direction from the top to the bottom of a page (*"Each mask object finally created is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory, i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots),*

sorting each mask object for each band, and making up a link list as shown in FIG. 5D within each band." column 6, lines 38-44).

Regarding claim 10; Shimzu '055 discloses where inputted rendering instructed are sorted and stored in the memory in said storage step, and the rendering instructions are read out and processed in said first and second rendering steps in the order in which they have been sorted and stored in the memory. (*"Each mask object finally created is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory, i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), sorting each mask object for each band, and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Regarding claim 11; Shimzu '055 discloses where the sorting order is in a direction from the top to the bottom of a page. (*"Each mask object finally created is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory, i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), sorting each mask object for each band, and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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